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**Toplo nanosljive tesnilne mase za stike – 1. del: Preskusna metoda za ugotavljanje gostote pri 25 °C**

Hot applied joint sealants - Part 1: Test method for the determination of density at 25 °C

Heiß verarbeitbare Fugenmassen - Teil 1: Prüfverfahren zur Bestimmung der Dichte bei 25 °C

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Produits de scellement de joints appliqués a chaud - Partie 1: Méthode d'essai pour la détermination de la masse volumique a 25 °C

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93.080.20	Materiali za gradnjo cest	Road construction materials

**SIST EN 13880-1:2004****en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 13880-1**

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ICS 93.080.20

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## Hot applied joint sealants - Part 1: Test method for the determination of density at 25 °C

Produits de scellement de joints appliqués à chaud - Partie 1: Méthode d'essai pour la détermination de la masse volumique à 25 °C

Heiß verarbeitbare Fugenmassen - Teil 1: Prüfverfahren zur Bestimmung der Dichte bei 25 °C

This European Standard was approved by CEN on 2 May 2003.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document EN 13880-1:2003 has been prepared by Technical Committee CEN/TC 227 "Road materials", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2004, and conflicting national standards shall be withdrawn at the latest by March 2005.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

This European Standard is one of a series of standards as listed below:

EN 13880-1, *Hot applied joint sealants — Part 1: Test method for the determination of density at 25 °C.*

EN 13880-2, *Hot applied joint sealants — Part 2: Test method for the determination of cone penetration at 25 °C.*

EN 13880-3, *Hot applied joint sealants — Part 3: Test method for the determination of penetration and recovery (resilience).*

EN 13880-4, *Hot applied joint sealants — Part 4: Test method for the determination of heat resistance — Change in penetration value.*

EN 13880-5, *Hot applied joint sealants — Part 5: Test method for the determination of flow resistance.*

prEN 13880-6, *Hot applied joint sealants — Part 6: Test method for the preparation of samples for testing.*

EN 13880-7, *Hot applied joint sealants — Part 7: Function testing of joint sealants.*

EN 13880-8, *Hot applied joint sealants — Part 8: Test method for the determination of the change in weight of fuel resistance joint sealants after fuel immersion.*

EN 13880-9, *Hot applied joint sealants — Part 9: Test method for the determination of compatibility with asphalt pavements.*

EN 13880-10, *Hot applied joint sealants — Part 10: Test method for the determination of adhesion and cohesion following continuous extension and compression.*

EN 13880-11, *Hot applied joint sealants — Part 11: Test method for the preparation of asphalt test blocks used in the function test and for the determination of compatibility with asphalt pavements.*

EN 13880-12, *Hot applied joint sealants — Part 12: Test method for the manufacture of concrete test blocks for bond testing (recipe methods).*

EN 13880-13, *Hot applied joint sealants — Part 13: Test method for the determination of the discontinuous extension (adherence test).*

## 1 Scope

This European Standard describes a method for determining the density of hot applied joint sealants.

**EN 13880-1:2003 (E)****2 Normative references**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

prEN 13880-6, *Hot applied joint sealants — Part 6: Test method for the preparation of samples for testing*.

prEN 14188-1:2001, *Joint fillers and sealants — Part 1: Specifications for hot applied sealants*.

**3 Terms and definitions**

For the purposes of this European Standard, the terms and definitions given in prEN 14188-1:2001 and the following apply.

**3.1****density**

mass of a substance divided by its volume at +25 °C

**4 Principle**

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A dry crucible is first weighed in air and then under water at 25 °C. After the crucible has been dried, the sealant is poured into the crucible and heated in the oven. After cooling to ambient temperature, the crucible and its contents are weighed again in air and then under water at 25 °C. The density is calculated from the four weighings.

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**5 Apparatus**

**5.1 Tin foil or aluminium crucible**, about 40 mm deep and with a diameter of about 30 mm, fitted with a wire handle with a diameter of about 0,15 mm. A new crucible shall be used for each determination.

**5.2 Thermometer**, with an accuracy of  $\pm 0,2$  °C, for temperature measurements between  $-1$  °C to  $+38$  °C.

**5.3 Laboratory balance**, capable of weighing to an accuracy of 0,001 g.

**5.4 Device for bridging the scale pan.**

**5.5 Water bath**, capable of maintaining the temperature to within 0,2 °C.

**5.6 Distilled or fully demineralised water**, deaerated by boiling prior to testing.

**6 Preparation and conditioning of test specimens**

**6.1** Prepare the test sample according to prEN 13880-6

## 7 Procedure

Weigh the dry crucible in air and then under water at  $(25,0 \pm 0,2)$  °C, to an accuracy of 1 mg (masses  $m_1$  and  $m_2$ ).

When weighing under water, ensure that no more than about half the wire handle is immersed in water. Dry the crucible and pour the bubble-free molten test sample into it up to a level about 5 mm below the upper rim.

Place the crucible in the oven for about 1 h at a constant temperature to allow air bubbles and moisture to escape. If necessary, carefully remove any small air bubbles from the sealant surface, using, for example, a pilot flame or a hot glass rod.

Then cool the test specimen to room temperature and weight it in air to an accuracy of 1 mg (mass  $m_3$ ).

After weighing condition the test specimen in the water bath at  $(25,0 \pm 0,2)$  °C for about 1 h. Then weigh it to an accuracy of 1 mg under water at  $(25,0 \pm 0,2)$  °C (mass  $m_4$ ) again immersing only about half the wire handle in the water. Ensure that no air bubbles adhere to the test specimen and handle during weighing under water.

## 8 Calculation

The density  $\rho$  of the sealant in air shall be calculated by the following formula:

$$\rho_{25} = \frac{m_3 - m_1}{(m_3 - m_4) - (m_1 - m_2)} \times \rho_{W25} \quad (1)$$

where

$\rho_{25}$  is the density of the sealant, in gram per cubic centimetre ( $\text{g/cm}^3$ );

$m_1$  is the mass of the crucible in air, in gram (g);

$m_2$  is the mass of the crucible under water, in gram (g);

$m_3$  is the mass of the test specimen in air, in gram (g);

$m_4$  is the mass of the test specimen under water, in gram (g);

$\rho_{W25}$  is the density of water at 25 °C, in gram per cubic centimetre ( $\text{g/cm}^3$ ) (0,99704  $\text{g/cm}^3$ ).

Calculate the density to the nearest 0,001  $\text{g/cm}^3$ .

## 9 Expression of results

The result is the average of three test specimens.

## 10 Precision

### 10.1 Repeatability limit

If two results are obtained under repeatability conditions by the same operator, both results shall be considered acceptable and in conformity with this European Standard if they differ by no more than 0,003  $\text{g/cm}^3$ .

**EN 13880-1:2003 (E)****10.2 Reproducibility limit**

If two laboratories each obtain a result under reproducibility conditions, both results shall be considered acceptable and in conformity with this standard if they differ by no more than 0,005 g/cm<sup>3</sup>.

**11 Test report**

The test report shall confirm that the test was carried out in accordance with this European Standard and shall include the following information:

- a) product name and type;
- b) source of sample, batch number and date of manufacture, where appropriate or expiry date;
- c) date of testing and test results obtained;
- d) name of analyst and test laboratory.

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